fluid in the third chamber of the valve into the second chamber of the valve while supplying pressurized fluid through the first fluid circuit.

[0010] Embodiments described herein comprise a combination of features and advantages intended to address various shortcomings associated with certain prior devices, systems, and methods. The various characteristics described above, as well as other features, will be apparent to those skilled in the art upon reading the following detailed description and by referring to the accompanying drawings.

[0010A] According to an aspect, there is provided a system for drilling a subsea wellbore, the system comprising: a blowout preventor comprising a main bore and a pair of opposed rams, each ram having an open position withdrawn from the main bore and a closed position extending into the main bore; and a valve configured to facilitate actuation of the rams, the valve comprising: a housing having a longitudinal axis and including a first chamber, a second chamber, and an intermediate chamber positioned axially between the first chamber and the second chamber; a first valve member at least partially disposed in the first chamber, wherein the first valve member has a closed position seated in a first annular valve seat and an open position spaced apart from the first valve seat; a second valve member at least partially disposed in the second chamber, wherein the second valve member has a closed position seated in a second annular valve seat and an open position spaced apart from the second valve seat; and a biasing member disposed in the second chamber between the second valve member and the housing.

Brief Description of the Drawings

[0011] For a detailed description of the preferred embodiments of the invention, reference will now be made to the accompanying drawings in which:

[0012] Figure 1 is a perspective view of an embodiment of a valve in accordance with the principles described herein;

[0013] Figure 2 is a top view of the valve of Figure 1;

[0014] Figure 3 is an end view of the valve of Figure 1;

[0015] Figure 4 is a perspective cross-sectional view of the valve of Figure 1 taken along line A-A of Figure 2;

[0016] Figure 5 is a cross-sectional side view of the valve of Figure 1 taken along line A-A of Figure 2 and in a close position;

[0017] Figure 6 is a cross-sectional side view of the valve of Figure 1 taken along line A-A of Figure 2 and in an open position;

[0018] Figure 7 is a cross-sectional side view of the valve of Figure 1 taken along line B-B of Figure 3;

[0019] Figure 8 is a schematic view of an offshore drilling and/or production system including a subsea BOP stack;

[0020] Figure 9 is an enlarged schematic view of the BOP stack of Figure 8;

[0021] Figure 10 is a schematic view of one ram actuator assembly of the BOP stack of Figure 9 closing one exemplary BOP ram of Figure 9; and

[0022] Figure 11 is a schematic view of the ram actuator assembly of Figure 10 opening the exemplary BOP ram of Figure 10.

What is claimed is:

1. A system for drilling a subsea wellbore, the system comprising:

a blowout preventor comprising a main bore and a pair of opposed rams, each ram having an open position withdrawn from the main bore and a closed position extending into the main bore; and

a valve configured to facilitate actuation of the rams, the valve comprising:

a housing having a longitudinal axis and including a first chamber, a second chamber, and an intermediate chamber positioned axially between the first chamber and the second chamber;

a first valve member at least partially disposed in the first chamber, wherein the first valve member has a closed position seated in a first annular valve seat and an open position spaced apart from the first valve seat;

a second valve member at least partially disposed in the second chamber, wherein the second valve member has a closed position seated in a second annular valve seat and an open position spaced apart from the second valve seat; and

a biasing member disposed in the second chamber between the second valve member and the housing.

2. The system of claim 1, wherein the valve includes a stem slidably disposed in the housing, wherein the stem has a first end connected to the first valve member and a second end connected to the second valve member.

3. The system of claim 2, wherein the biasing member is configured to bias the second valve member to the closed position and the first valve member to the open position.

4. The system of claim 1, further comprising:

an actuator assembly configured to transition one ram between the open position and the closed position, wherein the actuator assembly comprises:

a cylinder having an inner cavity;

a piston slidingly disposed in the cylinder, wherein the piston divides the inner cavity of the cylinder into a close chamber, an open chamber, and a neutral chamber positioned between the open chamber and the close chamber; and

a connecting rod coupled to the piston and the ram.

5. The system of claim 4, wherein the housing includes the first annular valve seat extending axially from the first chamber and the second annular valve seat extending axially from the second chamber;

wherein the first valve member engages the first valve seat in the closed position and is axially spaced from the first valve seat in the open position; and

wherein the second valve member engages the second valve seat in the closed position and is axially spaced from the second valve seat in the open position.

6. The system of claim 5, wherein the first valve member forms an annular metal-to-metal seal with the first valve seat in the closed position and the second valve member forms an annular metal-to-metal seal with the second valve seat in the closed position.

7. The system of claim 6, wherein the close chamber has a diameter and the open chamber has a diameter less than the diameter of the close chamber.

8. The system of claim 4, wherein the close chamber is in fluid communication with the first chamber, the intermediate chamber, and the neutral chamber when the first valve member is in the open position; and

wherein the open chamber is in fluid communication with the second chamber, the intermediate chamber, and the neutral chamber when the second valve member is in the open position.

9. The system of claim 4, wherein the inner cavity has a central axis and extends axially through the cylinder between a first end and a second end, wherein the inner cavity includes a first portion having a first radius and a second portion having a second radius that is less than the first radius;

wherein the piston has a first section that slidingly engages the cylinder in the first portion of the inner cavity and a second section that slidingly engages the cylinder in the second portion of the inner cavity.

10. The system of claim 9, wherein the close chamber extends axially from the first end of the inner cavity to the first section of the piston, the open chamber extends axially from the second end of the inner cavity to the second section of the piston, and the neutral chamber is disposed about the second section of the piston and within the first portion of the inner cavity.

11. The system of claim 8, further comprising:

a first fluid circuit in fluid communication with the close chamber, the first chamber, and a source of pressurized fluid;

a second fluid circuit in fluid communication with the open chamber, the second chamber, and a source of pressurized fluid; and

a flow line extending from the neutral chamber to the intermediate chamber.

12. The system of claim 11, wherein the source of pressurized fluid is one or more hydraulic accumulators.